Abstract of the Disclosure

Improved methods using microscope based detection for identifying nucleic acid polymorphisms rely on localizing the region to be tested using particulate labels. The length of a segment containing tandem repeats can be determined by the intensity of signal emitted by a fluorophore associated with the repeat and bracketed by the labels; the presence of an allele containing a restriction site can be identified by viewing the association or dissociation of particulate labels. Single nucleotide polymorphisms characterized by the presence or absence of a referent base can be detected with a large differential in binding energy using short probes, by virtue of localizing the base to be interrogated with flanking particulate labels. The methods may be performed on a multiplicity of test nucleic acids simultaneously by employing a multiplicity of particulate labels with differing hues.